Buprenorphine treatment persistence and healthcare utilization: A retrospective claims study in patients with opioid use disorder

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BACKGROUND

- Opioid Use Disorder (OUD) is a chronic, relapsing disease which involves functional changes to some brain circuits related to self-control and decision making.[1]
- Defined as a physical dependence with compulsive drug seeking and use despite adverse consequences.[1]
- Individuals attempting to abstain from opioids may relapse and revert to opioid abuse.[1]
- OUD can be successfully managed with medications (MOUD), including buprenorphine (BPN), methadone and naltrexone.[2]

OBJECTIVE

- To describe healthcare resource utilization among patients not treated with MOUD, non-persistently treated with BPN, and persistently treated with BPN.

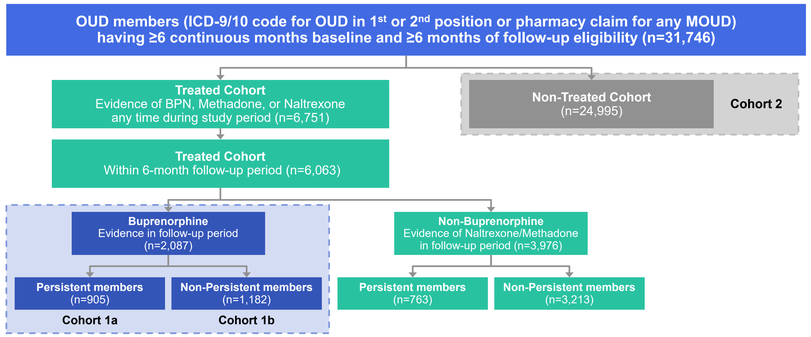
METHODS

- This retrospective claims study was conducted with a database of 15.9 million patients during a 45-month period (January 1, 2014 – September 30, 2017) from a national US health plan (Aetna) providing medical/pharmacy commercial and Medicare Advantage coverage.
- OUD patients included those with an ICD-9/10 code for OUD in primary or secondary position or a pharmacy claim for any MOUD.
- Individuals were ≥18 years old and continuous enrollment with medical/pharmacy benefits for 6 months before the index date (first date with evidence of OUD) with ≥6 months of follow-up was required.
- Three cohorts were evaluated: BPN persistent, BPN non-persistent and untreated (no MOUD claims).
- Persistence was measured as the number of days from first to last BPN claim before a ≥30-day gap.
- All-cause and OUD-related emergency department (ED) and inpatient (IP) visits were identified.
- Intravenous drug use (IVDU) complications were assessed as ED/IP visits for cellulitis/abscess.
- Results are reported in aggregate and healthcare utilization (HCU) costs in per patient per year.
- Persistence was measured as the number of days from first to last BPN claim before a ≥30-day gap.
  - Individuals whose last MOUD claim was 30 days or fewer before the end of the follow-up period were considered to be persistent.

RESULTS

- A total of 31,746 patients with OUD were identified.
- For the majority (24,995 [79%]) no claims for MOUD during the study period were identified (non-treated cohort). (**Figure 1**)
- Total of 6,751 (21%) patients with OUD had a baseline MOUD claim, of those, 6,063 utilized MOUD within the follow-up. (**Figure 1**)
  - 2,087 (34%) had claims for BPN with 905 (43%) of these persistent and 1,182 (57%) non-persistent.
    - 768 (65%) of the non-persistent discontinued BPN treatment within 60 days.
  - 3,976 had a claim for methadone or naltrexone with 763 (19%) persistent and 3,213 (81%) non-persistent.

Figure 1. Study Cohorts



MOUD, medication for the treatment of opioid use disorder; BPN, buprenorphine; OUD, opioid use disorder

- MOUD persistence was 28% with a mean duration of 88 days post OUD diagnosis.
- The BPN persistent had a lower baseline incidence of chronic pain (22% vs 28%), back pain (45% vs 54%), and alcohol abuse (0.7% vs 1.8%) as compared to BPN non-persistent ($p<0.05$) and non-treated (31%, 59%, and 4.5%, respectively). (**Table 1**)

Table 1. Patient Demographics and Selected Clinical Characteristics

	BPN Persistent (Cohort 1a)	BPN Non-Persistent (Cohort 1b)	Non-Treated (Cohort 2)
Sample size (n)	905	1,182	24,995
Demographics			
Gender, % male	67%	65%	58%
Age (years), mean	37.7	37.0†	46.9
Episode Risk Group Score*, mean	2.1	2.7†	3.6
Specific baseline comorbidities, %			
ADHD	3.2%	3.5%	2.3%
PTSD	1.8%	1.9%	1.7%
Hepatitis C	0.3%	0.9%	0.03%
Chronic pain	22%	28%†	31%
Back pain	45%	54%†	59%
Baseline substance abuse, %			
Cocaine	0.3%	0.3%	0.4%
Alcohol	0.7%	1.8%†	4.5%
Cannabis	0.1%	0.5%	0.9%

BPN, buprenorphine; ADHD, attention deficit hyperactivity disorder; PTSD, posttraumatic stress disorder
†Statistically significant difference ($p<0.05$) between BPN Persistent and BPN Non-Persistent cohorts
*Episode Risk Score (ERG): proprietary algorithm by Optum to describe burden of illness using 12 consecutive months of claims data

- In the follow-up, 45% of non-treated, 33.3% of non-persistent, and 14.3% of persistent patients had a pharmacy claim for a non-MOUD opioid. Short-acting opioids were the most commonly utilized. (**Table 2**)
  - Follow-up period: 6 months post index date

Table 2. Non-MOUD Prescription Opioid Utilization (follow-up)

	Cohort 1a Persistent BPN users (n=905)			Cohort 1b Non-Persistent BPN users (n=1,182)			Cohort 2 Non-Treated (n=24,995)		
	Long-acting	Short-acting	Combination	Long-acting	Short-acting	Combination	Long-acting	Short-acting	Combination
# Members (N)	12	128	91	89	385	278	2,561	11,271	8,477
% Cohort	1.33%	14.14%	10.06%	7.53%	32.57%	23.52%	10.25%	45.09%	33.91%
Day supply, mean (SD)	30.16 (18.40)	40.09 (75.67)	30.52 (52.06)	84.34 (58.28)	62.90 (72.14)	49.36 (62.83)	151.49 (97.60)	95.57 (91.47)	75.70 (80.16)
# Fill, mean (SD)	1.25 (0.45)	2.21 (2.68)	1.92 (1.73)	3.25 (2.18)	3.21 (2.95)	2.67 (2.45)	5.06 (2.90)	4.24 (3.57)	3.45 (2.91)

BPN, buprenorphine; SD, standard deviation

- In the follow-up, 3 (0.3%) of the BPN persistent had a prescription opioid or heroin overdose-related emergency department or inpatient visit, compared to 28 (2.4%) of BPN non-persistent and 340 (1.4%) of untreated. (**Table 3**)

Table 3. Opioid and Heroin Overdose-related Healthcare Utilization (follow-up)

		# Members	# Visits
Opioid overdose-related health services	**1a. BPN Persistent (n=905)**		
	Inpatient visits	2	2
	Emergency department visits	0	–
	1b. BPN Non-Persistent (n=1,182)		
	Inpatient visits	7	8
	Emergency department visits	7	8
	Non-Treated (n=24,995)		
	Inpatient visits	147	152
	ED visits	143	157
Heroin overdose-related health services	**1a. BPN Persistent (n=905)**		
	Inpatient visits	0	–
	Emergency department visits	1	1
	1b. BPN Non-Persistent (n=1,182)		
	Inpatient visits	5	5
	Emergency department visits	9	10
	Non-Treated (n=24,995)		
	Inpatient visits	17	17
	Emergency department visits	33	35

Opioid overdose: Diagnosis code (965.09, E850.2, E935.2, T40.0%, T40.2%, T40.4%, or T40.6%) in any position
Heroin overdose: Diagnosis code (T40.1%) in any position
Follow-up period: 6 months post index date; Index date: First claim date with evidence of OUD (diagnosis or pharmacy)
BPN, buprenorphine
For Cohort 1b Inpatient setting, one member was removed owing to an outlier cost value (n=1,181)

LIMITATIONS

- Potential for errors in coding for medical claims.
- Pharmacy claims reflect fills but not if the medication was taken by the patient. Some patients may have been using MOUD before the baseline period.
- Various databases hold samples which are not random. As such, they may not be generalizable to the other populations.
- Lack of clinical information in claims data or outcomes that occurred outside a health care encounter (e.g., fatal overdoses).

CONCLUSIONS

- BPN persistence was shown to be low and early discontinuation was frequent.
- Non-MOUD opioid utilization was common in all patients diagnosed with OUD and opioid overdose-related utilization was comparable between the untreated and non-persistent. Improved methods to identify patients with OUD in need of additional interventions and methods to prolong BPN treatment duration are needed.
- Treatment strategies which improve BPN persistence may improve patient outcomes and reduce healthcare resource utilization.

REFERENCES

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DISCLOSURES

- NB-K is an employee of Braeburn.

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